USB 3.0 ENGINEERING CHANGE NOTIFICATION

ECN# 002
4 April 2009

Name: Yun Ling Email: Yun.ling@intel.com

Company: Intel Corporation Mailstop: JF2-54

Address: 2111 NE 25th Ave

City: Hillsboro State/Province: OR

Country: US Zip/Postal Code: 97124

Phone: 503-264-4977 FAX: 503-264-6053

Name: Email:

Company: Mailstop:

Address:

City: State/Province:

Country: Zip/Postal Code:

Phone:

Name: Email:

Company: Mailstop:

Address: .

City: State/Province:

Country: Zip/Postal Code:

Phone:

USB 3.0 ENGINEERING CHANGE NOTIFICATION

Title: USB3.0 Standard-B and Standard-B Crosstalk
Applied to: USB3.0 (11132008)-final

Brief description of the functional changes proposed:

The near end crosstalk between SuperSpeed pairs was relaxed from -32 dB to -27 dB from Rev 0.9 to Rev 1.0 since some connector vendors had difficulties to meet the -32 dB requirement. It was found recently that by slightly changing the reference Standard-B connector footprint, the -32 dB crosstalk can be achieved. Thus it is proposed to tighten the Std-A and Std-B connector SuperSpeed crosstalk to the original -32 dB level to gain more solution space for USB3 channels.

Benefits as a result of the proposed changes:

More solution space for USB3 channels. This is important because USB3 has to support a variety of channel topologies that are currently supported by USB2.0.

An assessment of the impact to the existing revision and systems that currently conform to the USB specification:

No USB3 system exists yet and the USB3 connector is still in prototype stage.

An analysis of the hardware implications:

Connector vendors need to improve the Standard-B connector design with the new reference footprint to achieve the -32 dB crosstalk.

An analysis of the software implications:

None.

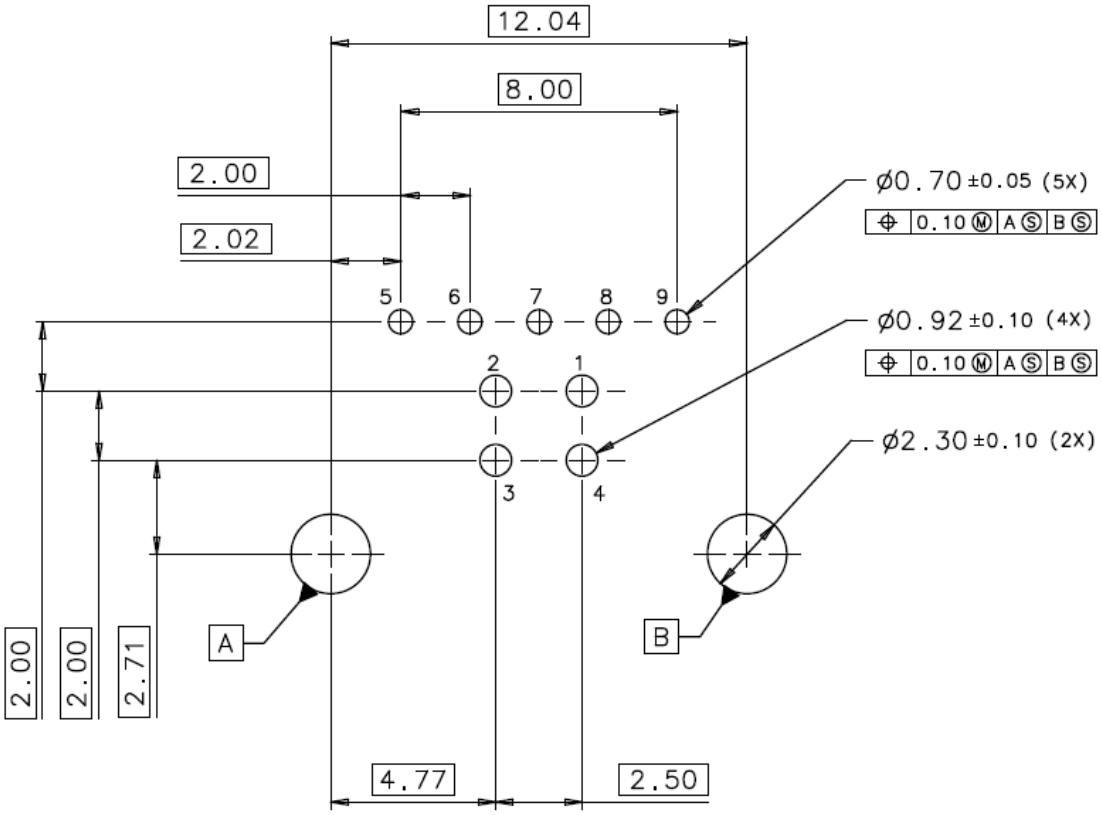
An analysis of the compliance testing implications:

The USB3.0 Connector Compliance Spec is still under development and this change can intercept the compliance spec with no problem.

USB 3.0 ENGINEERING CHANGE NOTIFICATION

Actual Change Requested

(a). From Text (and location): Section 5.3.2.1, Page 5-19, Figure 5-8

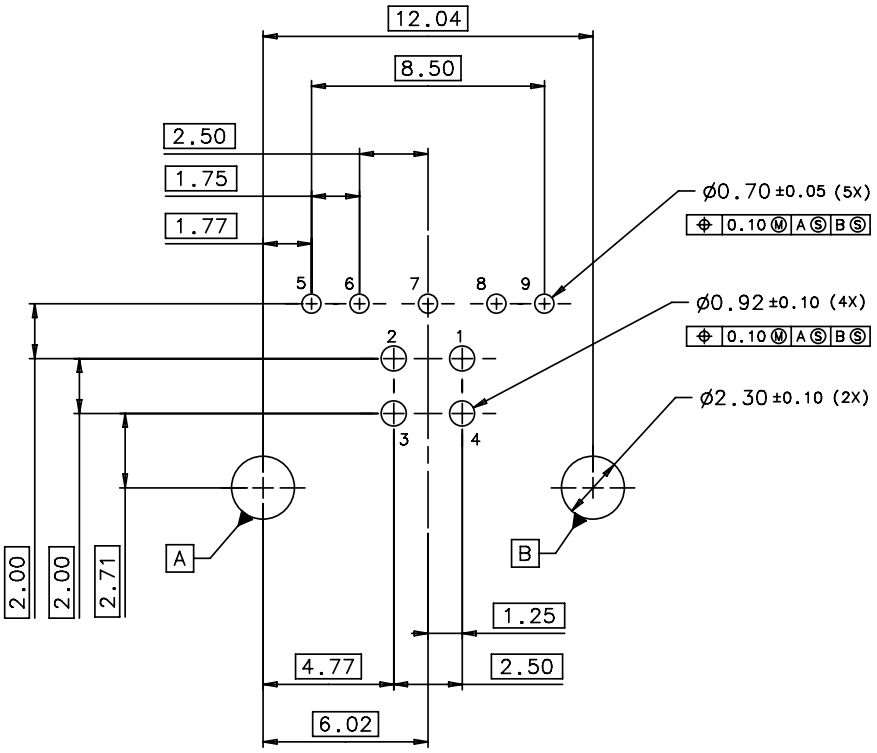


REFERENCE PCB LAYOUT

USB 3.0 ENGINEERING CHANGE NOTIFICATION

To Text (and location): Section 5.3.2.1, Page 5-19, Figure 5-8

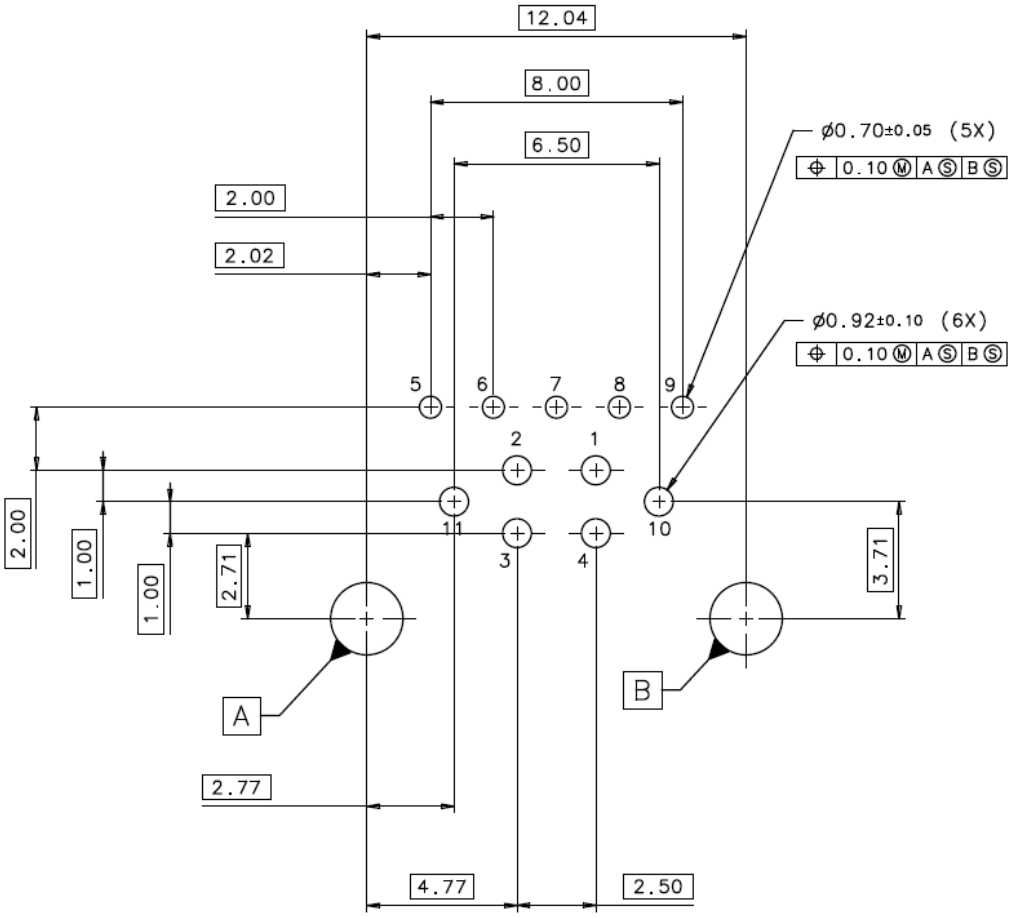
Replace Figure 5-8 with:



REFERENCE PCB LAYOUT

USB 3.0 ENGINEERING CHANGE NOTIFICATION

(b). From Text (and location): Section 5.3.3.1, Page 5-24, Figure 5-11

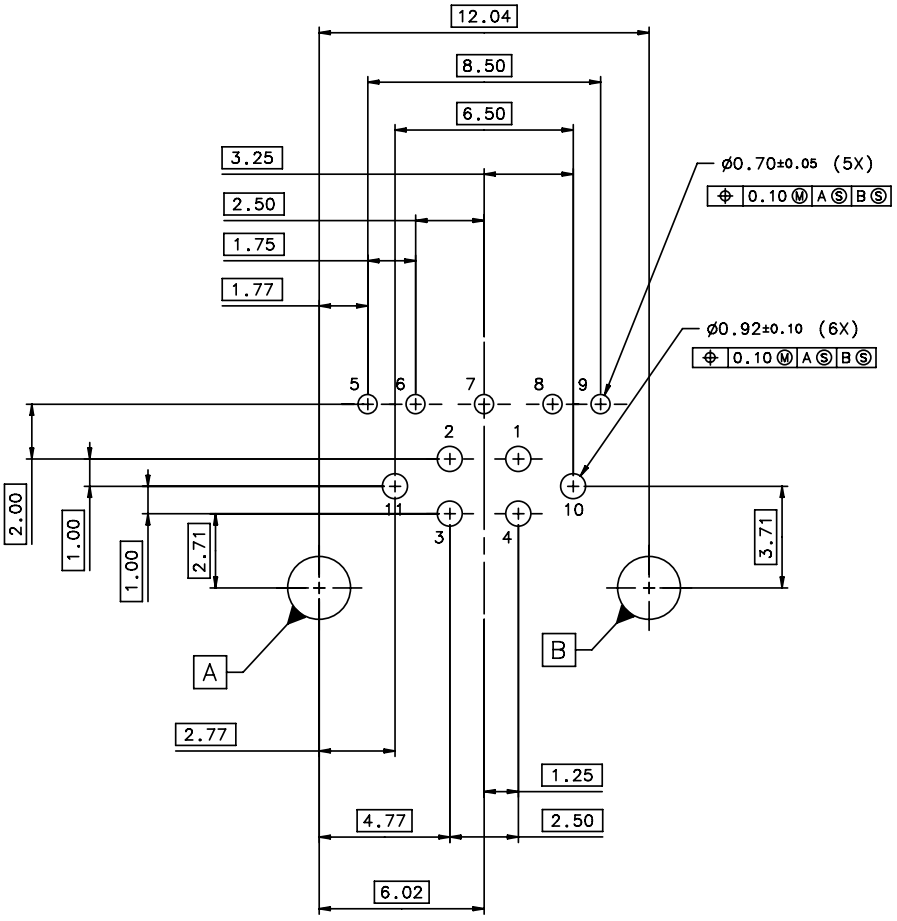


REFERENCE PCB LAYOUT

USB 3.0 ENGINEERING CHANGE NOTIFICATION

To Text (and location): Section 5.3.3.1, Page 5-24, Figure 5-11

Replace Figure 5-11 with:



REFERENCE PCB LAYOUT

(c). From Text (and location): Section 5.6.1.3.2, Page 5-50

The differential crosstalk measures the unwanted coupling between differential pairs. Since the Tx pair is right next to the Rx pair for SuperSpeed, only the differential near-end crosstalk (DDNEXT) is specified, as shown in Figure 5-24, referencing to a 90-Ω differential impedance. The mated cable assembly meets the DDNEXT requirement if its DDENXT does not exceed the limit shown in Figure 5-24; the vertices that defines the DDNEXT limit are: (100 MHz, -27 dB), (2.5 GHz, -27 dB), (3 GHz,-23 dB) and (7.5GHz, -23 dB).

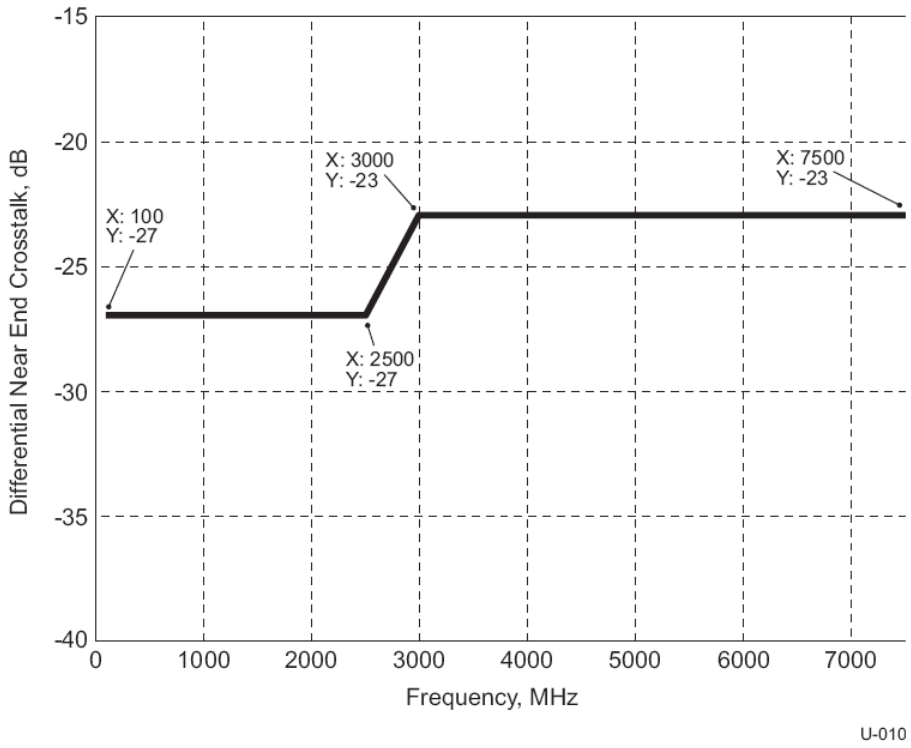


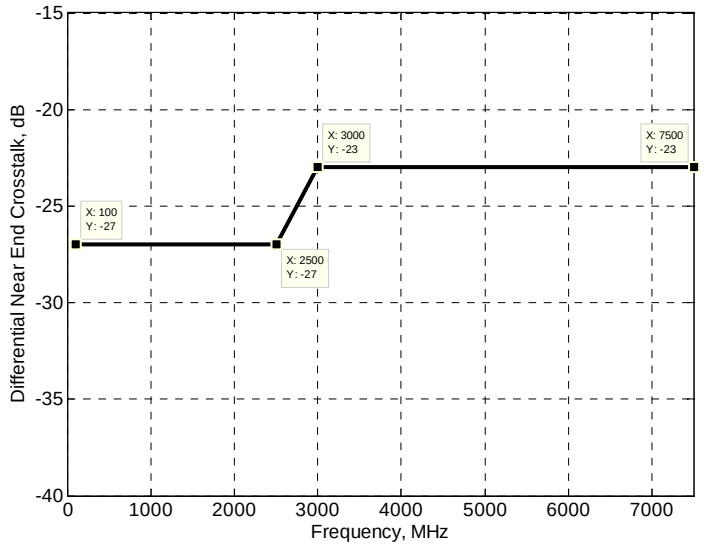
Figure 5-24. Differential Near-End Crosstalk Requirement Between SuperSpeed Pairs

USB 3.0 ENGINEERING CHANGE NOTIFICATION

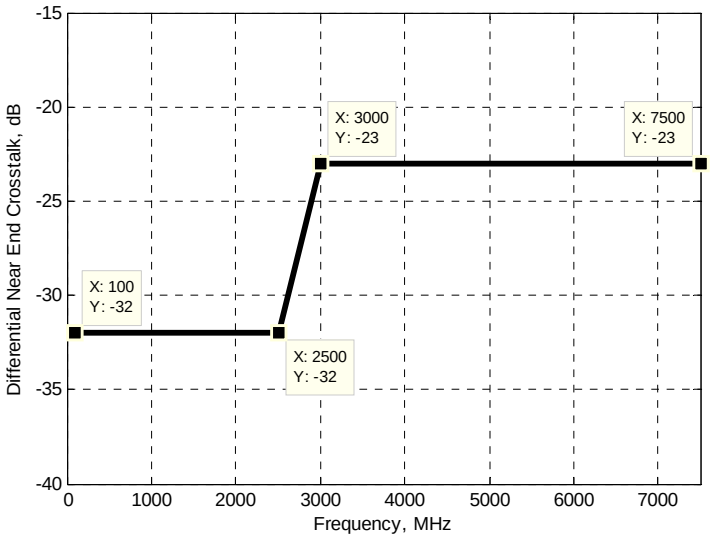
To Text (and location): Section 5.6.1.3.2, Page 5-50

The differential crosstalk measures the unwanted coupling between differential pairs. Since the Tx pair is right next to the Rx pair for SuperSpeed, only the differential near-end crosstalk (DDNEXT) is specified, as shown in Figure **Error! No text of specified style in document.**-1. The mated cable assembly meets the DDNEXT requirement if its DDENXT does not exceed the limit shown in Figure **Error! No text of specified style in document.**-1; the vertices that defines the DDNEXT limit are:

- For USB 3.0 Micro connector family: (100 MHz, -27 dB), (2.5 GHz, -27 dB), (3 GHz,-23 dB) and (7.5GHz, -23 dB)
- For all other USB 3.0 connectors: (100 MHz, -32 dB), (2.5 GHz, -32 dB), (3 GHz,-23 dB) and (7.5GHz, -23 dB)



(a) For USB 3.0 Micro-B Family



(b) For all other USB 3.0 Connectors

Figure Error! No text of specified style in document.**-1. Differential Near-End Crosstalk Requirement between SuperSpeed Pairs**